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Report of surveys on the early stages of butterflies in the Nanling area (5)

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Abstract The early stages of eight species, *Troides aeacus*, *Graphium chilonides*, *Helcyra subalba*, *Helcyra superba*, *Lethe helena*, *Seseria dohertyi*, *Satarupa valentini* and *Apostictopterus fuliginosus* are described from the Nanling area, Guangdong, China.

Key words ovum, larva, pupa, Guangdong (China), Nanling Nature Reserve, *Troides aeacus*, *Graphium chilonides*, *Helcyra subalba*, *Helcyra superba*, *Lethe helena*, *Seseria dohertyi*, *Satarupa valentini* and *Apostictopterus fuliginosus*.

Introduction

More than 500 species of butterflies are known from Guangdong, China, and most of them are recorded from the Nanling mountain area.

We made research trips twice a year to study the morphology of larvae, food plants, the habits of early stages, the flight of adults in summer and hibernation in winter in the Nanling area (Harada *et al.*, 2009, 2010, 2011, 2012). We have examined about a hundred species in the field and added new and interesting information to what was previously known.

Methods

The expeditions were carried out from the autumn of 2006 to the winter of 2009. During these periods the ova, larvae, pupae and adults of many species of butterflies were recorded with field notes and photographed.

Some living female specimens were kept in cages to examine the egg laying habits.

Result of Surveys

The following are notes on some additional species of particular interest:

(1) *Troides aeacus* (Figs 1–7)

Habitat: Along open valleys at an altitude of about 800 m.

Larval food plant: *Aristolochia tubiflora* / Aristolochiaceae

Larva: The second instar larvae were found on the food plant in open spaces along the valley.

The young larva rests mostly on the underside of a leaf, but the mature larva often rests on the food plant stem or a firm object near the firm spun silken pad.

Pupa: Pupation often occurs at the top of a branch near the food plant.

Flight: The butterfly is bivoltine in this area.

(2) *Graphium chilonides* (Figs 8–17)

Habitat: Along road side where food plant is planted at an altitude of about 500~1,000 m.

Larval food plant: *Magnolia foldiana*, *Michelia macclurei*, *Sasafras tsumu* / Magnoliaceae

Ovum: Ovum is laid singly on a new bud or the undersurface of a young leaf of the food plant.

Larva: The young larva feeds on young leaves. The larva rests on the leaf upper surface on a spun silken pad.

Pupa: The pupa is attached to the leaf undersurface with its head directed towards the petiole. It is bluish green in color.

Flight: The butterfly is multivoltine (twice or three times in the year).

(3) *Helcyra subalba* (Figs 18–30)

Habitat: Edge of forest at an altitude of about 500~1,000 m.

Larval food plant: *Celtis biondii*, *C. leveillei* / Cannabaceae

Larva: The third instar larva, turned brown in color, hibernates on a dead leaf fixed to a twig with silk.

We often observed the hibernating larvae of this species and *H. superba* on the same tree. In the early spring when

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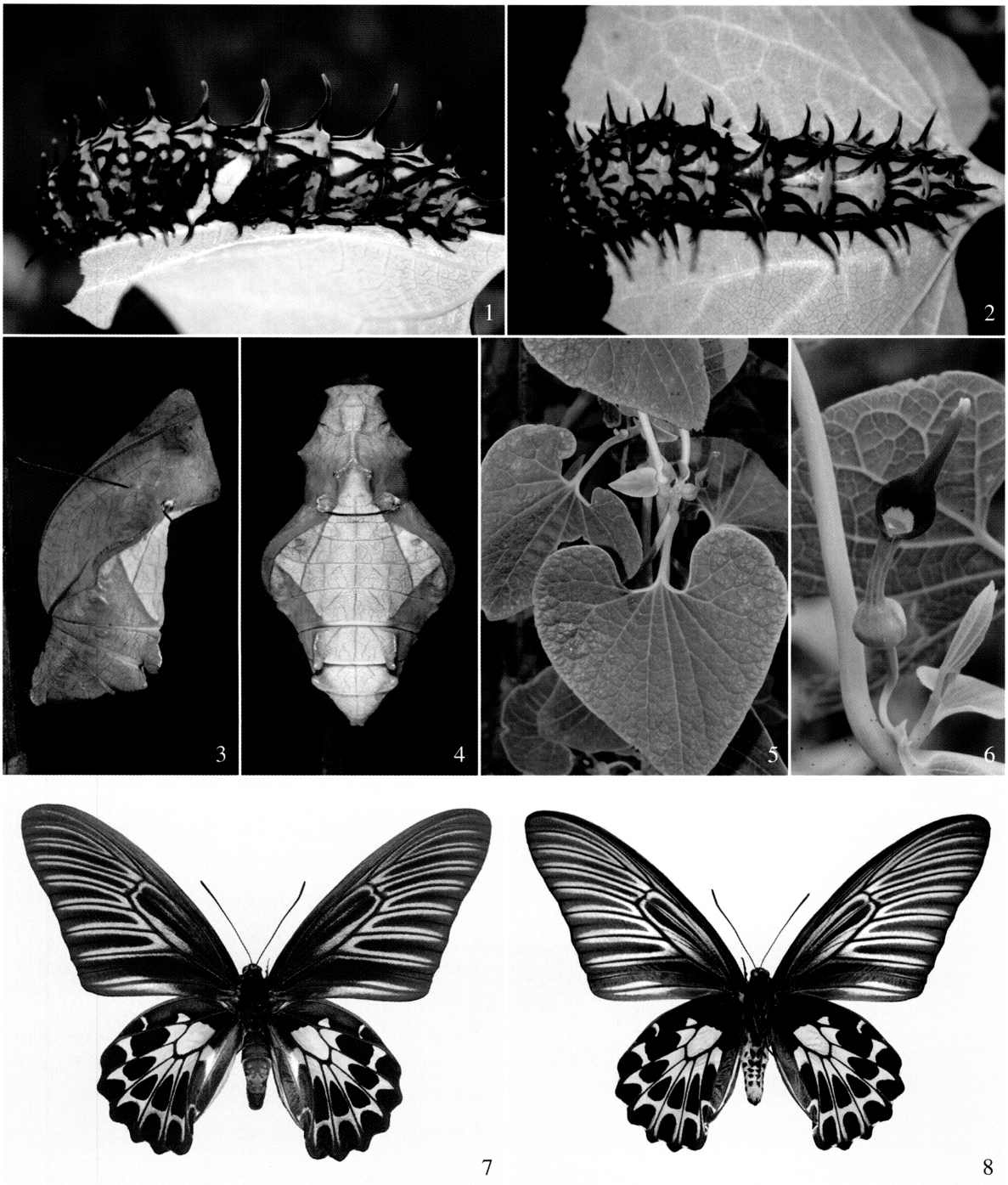

Figs 1–8. *Troides aeacus*.
1–2: Last instar larva. 3–4: pupa. 5–6: Food plant (*Aristolochia tubi flora*). 7–8: Female.

H. superba is still in hibernation, the larva moves to the twigs on which new buds are beginning to unfold. Thereafter the larva rests on a leaf undersurface until pupation.

Pupa: Pupation takes place on the leaf undersurface.

Flight: The butterfly is univoltine.

(4) *Helcyra superba* (Figs 31–46)

Habitat: Edge of forest at an altitude of about 500~1,000 m.

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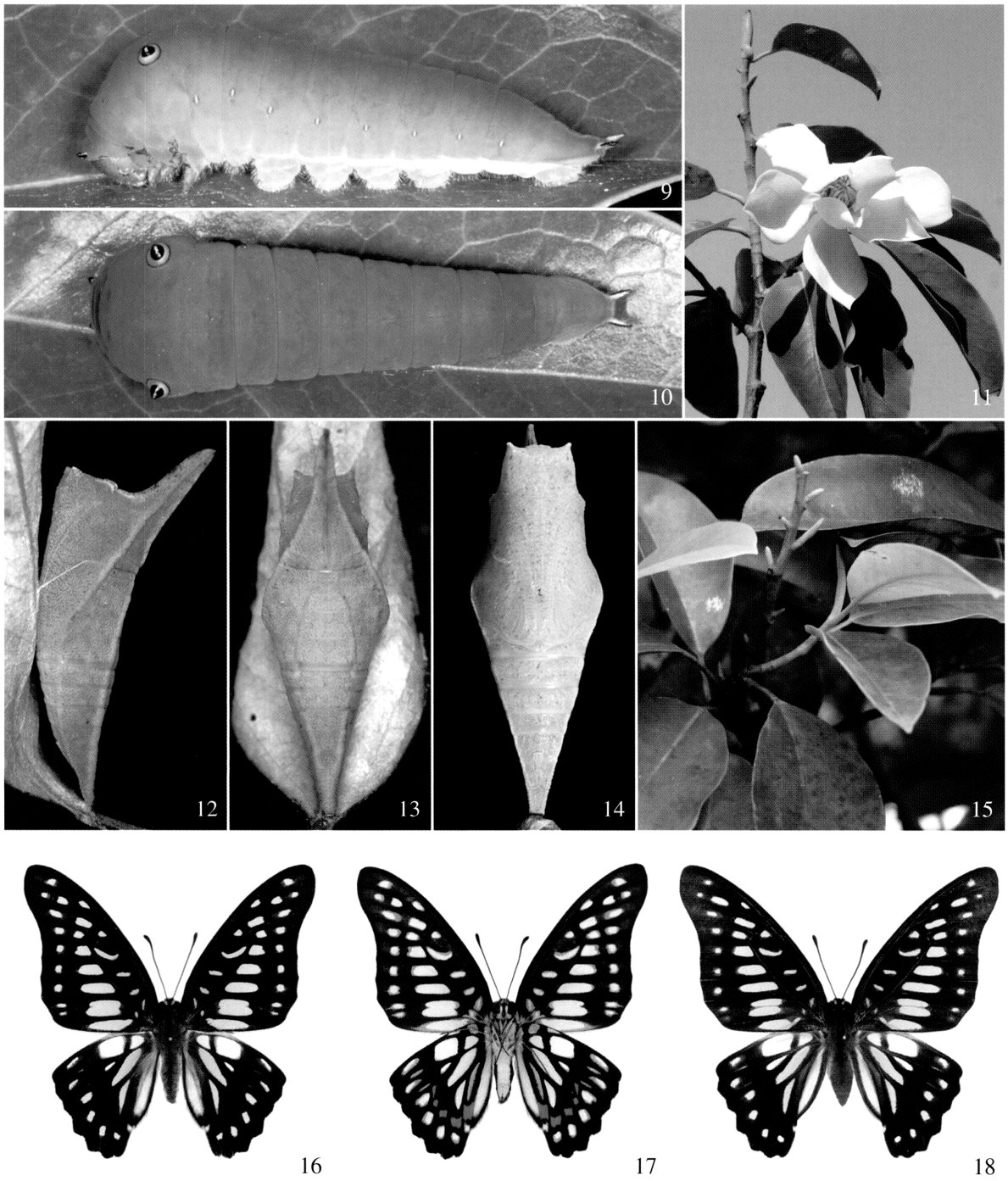

Figs 9–18. *Graphium chilonides*.
8–9: Last instar larva. 11, 15: Food plant (*Magnolia foldiana*). 12–14: Pupa. 16–17: Male. 18: Female

Larval food plant: *Celtis biondii*, *C. leveillei* / Cannabaceae

Ovum: The ovum is laid singly on the lower surface of a leaf. The newly laid ovum is white in color, gradually developing dark spots with the growth of the larva within.

Larva: The first to second instar larva rests on the leaf undersurface tip with the head directed towards the petiole. The larva feeds little by little on the leaf edges, and hangs a small leaf fragment cut off at the leaf tip, as *Neptis* larvae.

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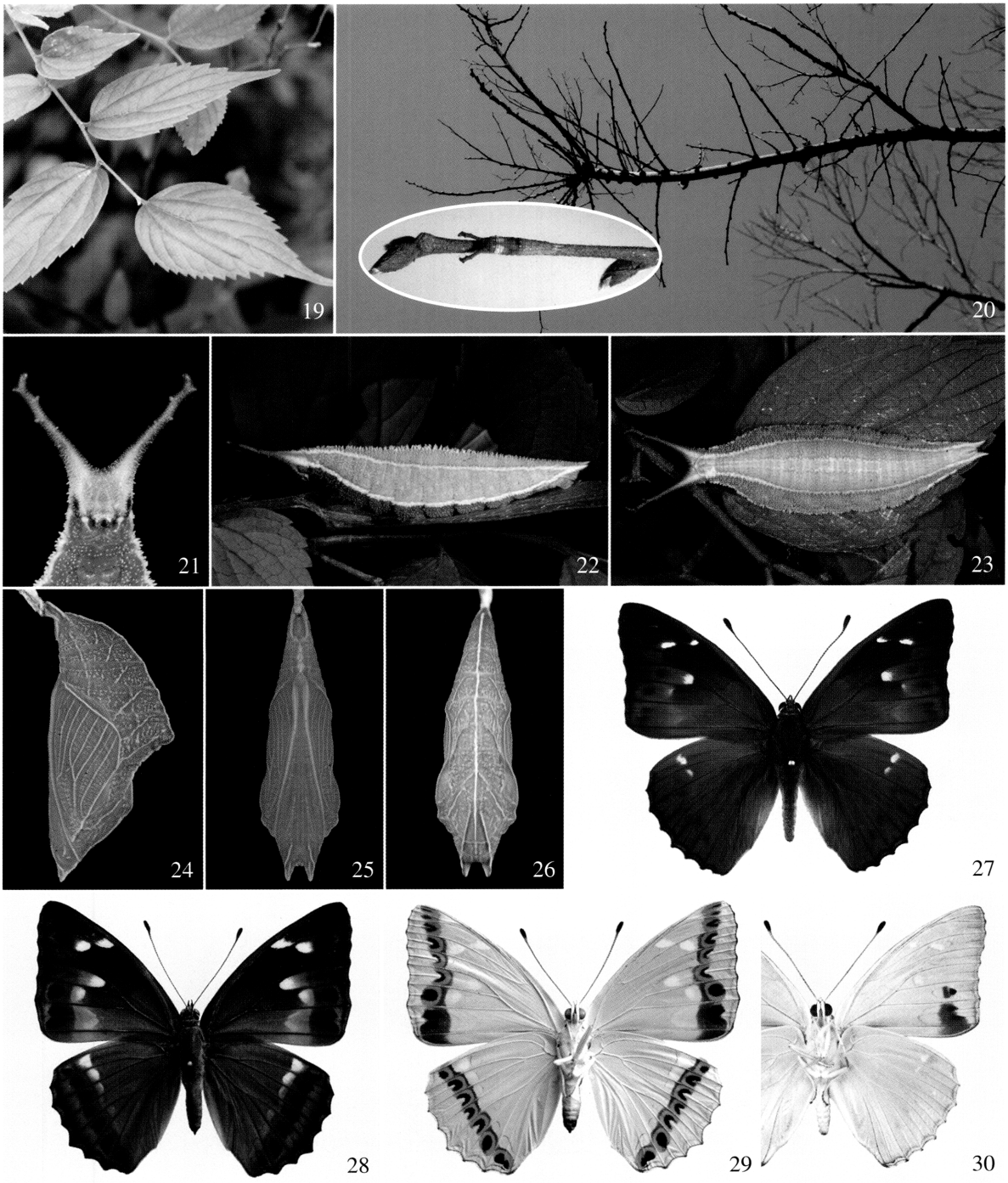

Figs 19–30. *Helcyra subalba*.
19: Food Plant (*Celtis leveille*). 20: Over wintering larva and food plant. 21: Head.
22–23: Last instar larva. 24–26: Pupa. 27–30: Male. 28–29: Female.

The third instar larva turns to brown in color and hibernates. The hibernating larva is often found on a dead leaf fixed to a twig with silk. Even in the spring after resuming feeding, many fourth instar larvae remain brown in color and show a strong similarity to the nest.

Pupa: Pupation takes place on the leaf undersurface.

Flight: The butterfly is univoltine.

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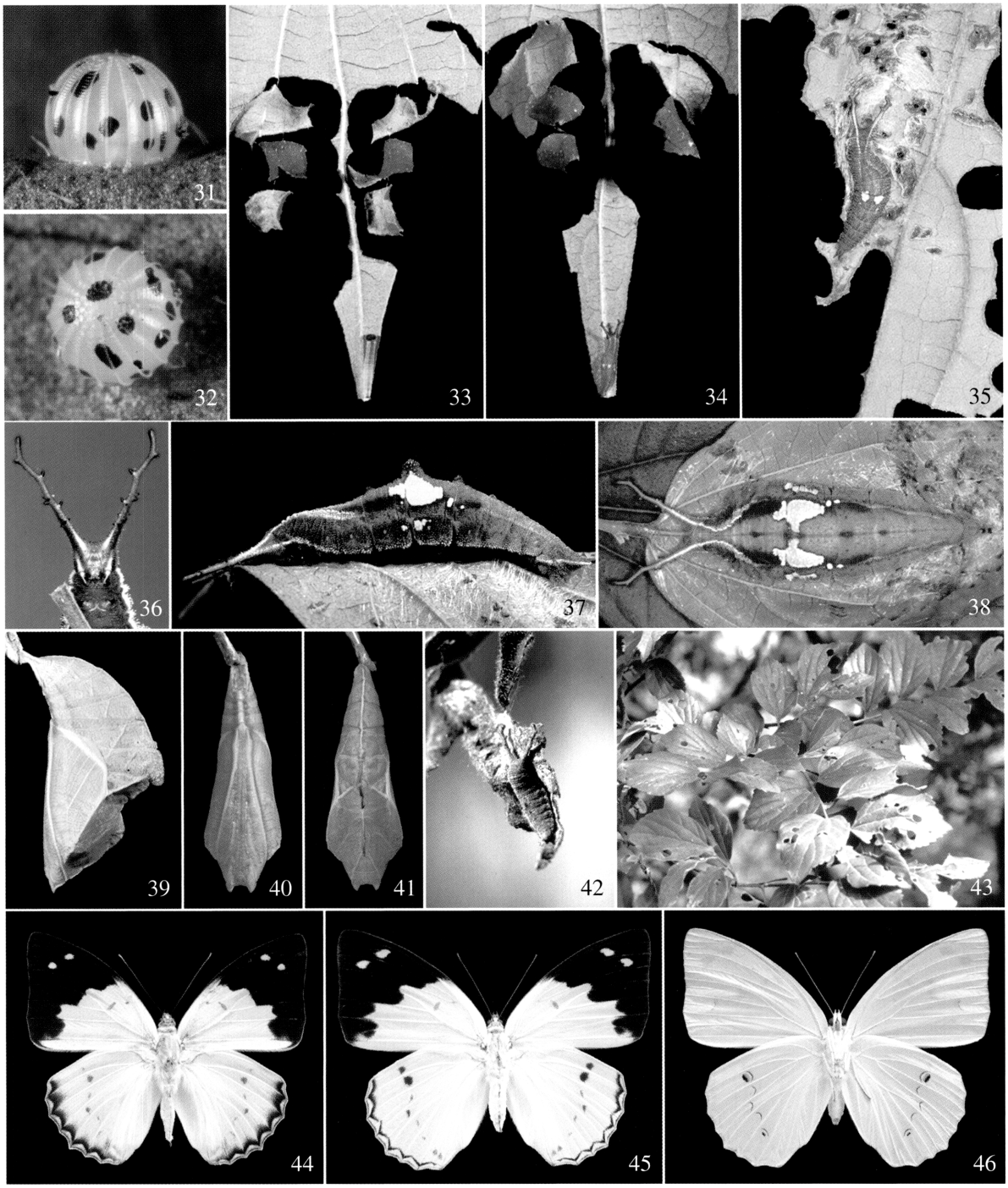

Figs 31–46. *Helcyra superba*.
31–32: Ovum. 33: 1st instar larva. 34: 2nd instar larva. 35: 3rd instar larva. 36: Head. 37–38: Last instar larva. 39–41: Pupa. 42: Overwintering 4th instar larva. 43: Food plant (*Celtis leveille*). 44: Male. 45–46: Female.

(5) *Lethe helena* (Figs 46–56)

Habitat: Edge of forest along valleys at an altitude of about 1,000 m.

Larval food plant: *Phyllostachys* sp. / Gramineae

Larva: The larvae were observed on a leaf undersurface of the food plant at about one meter high above the ground.

Pupa: Pupation takes place on the leaf undersurface.

Flight: The butterfly is univoltine.

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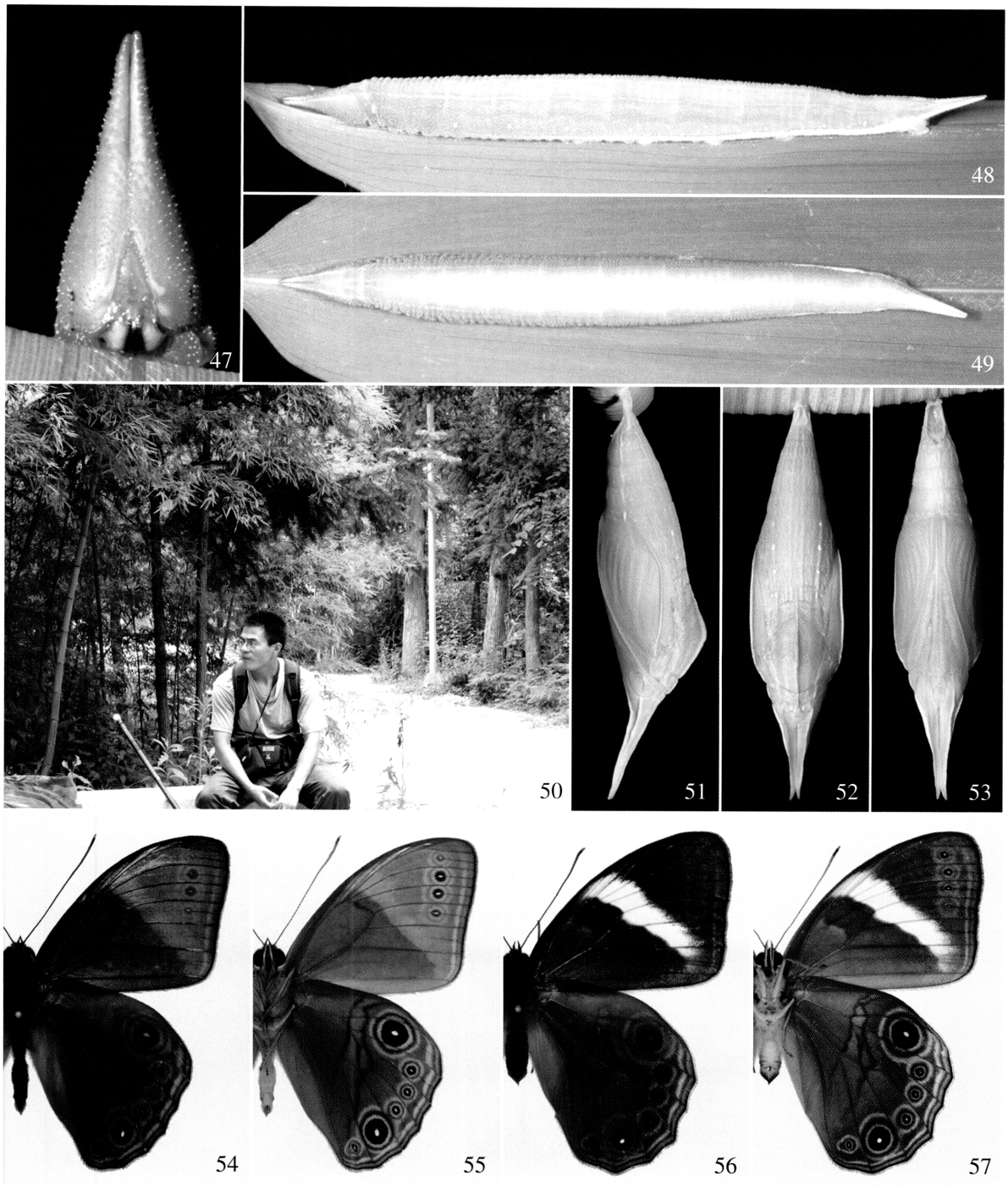

Figs 47–57. *Lethe helena*.
47: Last instar larva head. 48–49: Last instar larva. 50: Habitat. 51–53: Pupa.
54–55: Male. 56–57: Female.

Remarks: This is the first record of the early stages of this species.

(6) *Seseria dohertyi* (Figs 57–65)

Habitat: Along the valleys at an altitude of about 800m.

Larval food plant: *Cinamomum camphora* / Lauraceae

Ovum: The ovum is laid singly on new buds of the food plant.

Larva: The newly hatched larva cuts out a triangular piece

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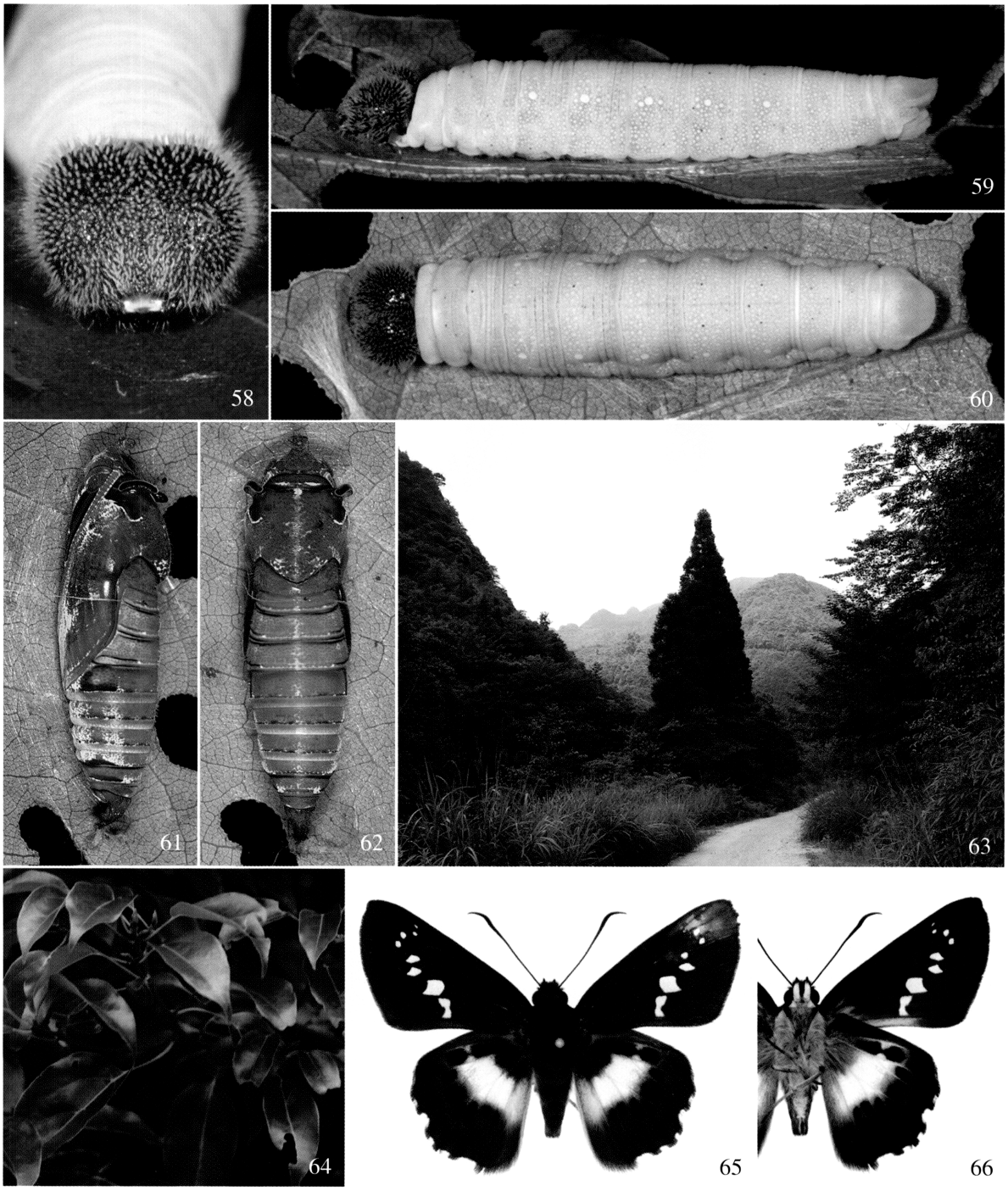

Figs 58–66. *Seseria dohertyi*.
58: Last instar larva head. 59–60: Last instar larva. 61–62: Pupa. 63: Habitat.
64: Food plant (*Cinnamomum camphora*). 65–66: Male.

to make the roof of the nest made on the leaf upper surface. It makes a larger nest as it grows. The fifth (last) instar larva fastens two leaves with silk to make a nest, and comes out of the nest for feeding mainly during the night.

Pupa: Pupation occurs in the nest.

(7) *Satarupa valentini* (Figs 66–75)

Habitat: Flies at the edge of the forest and in open areas in the forest at an altitude of about 800~1,200 m.

Larval food plant: *Clausena excavata* / Rutaceae

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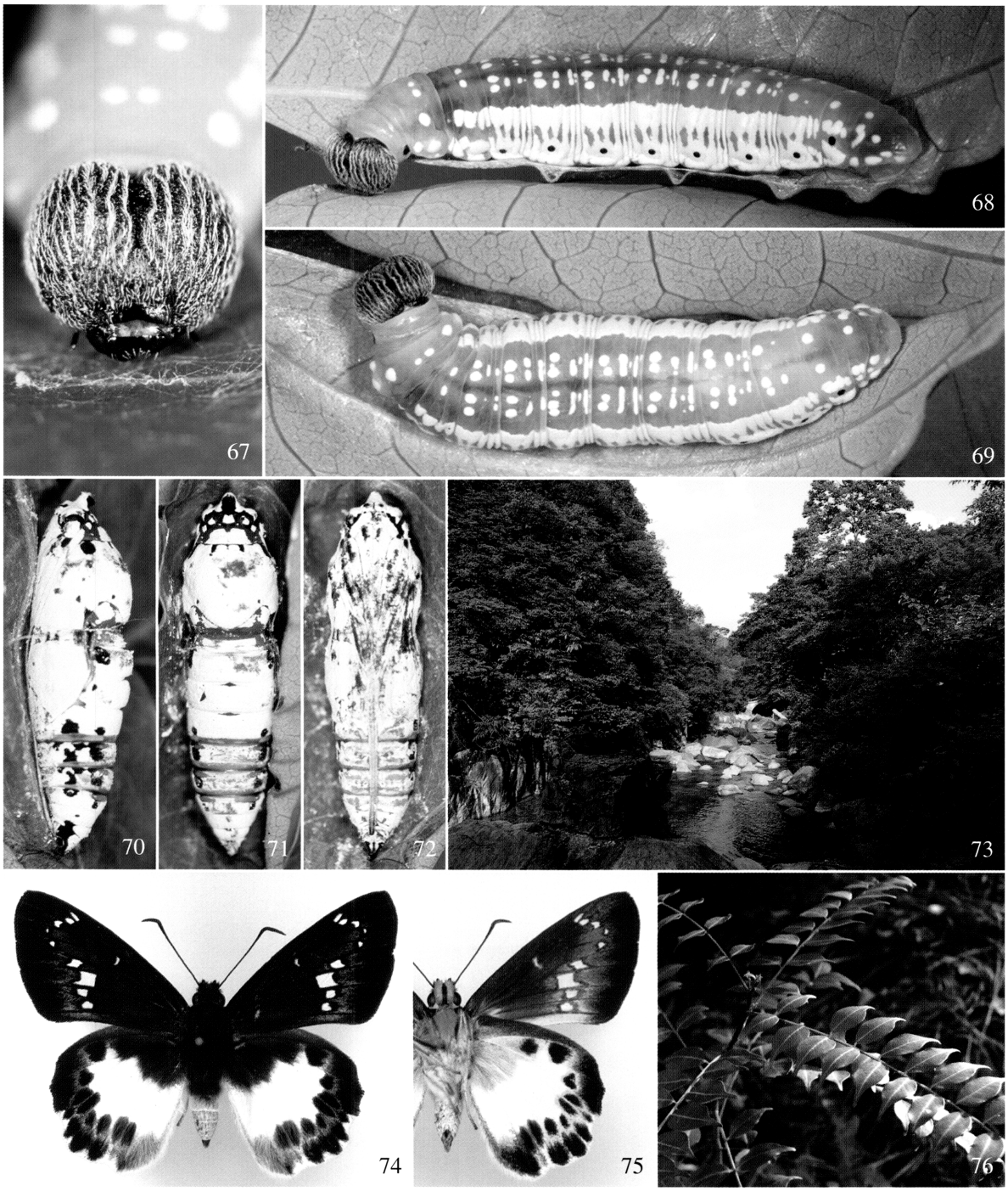

Figs 67–76. *Satarupa valentini*.
67: Last instar larva head. 68–69: Last instar larva. 70–72: Pupa.
73: Habitat. 74–75: Male. 76: Food plant (*Clausena excavata*).

Larva: The larva makes a nest as do other species of the genus, and hibernates at third instar.

Pupa: Pupation occurs in a nest made from two neighboring leaflets.

Flight: The butterfly is univoltine.

Remarks: This is the first record of the early stages of this species.

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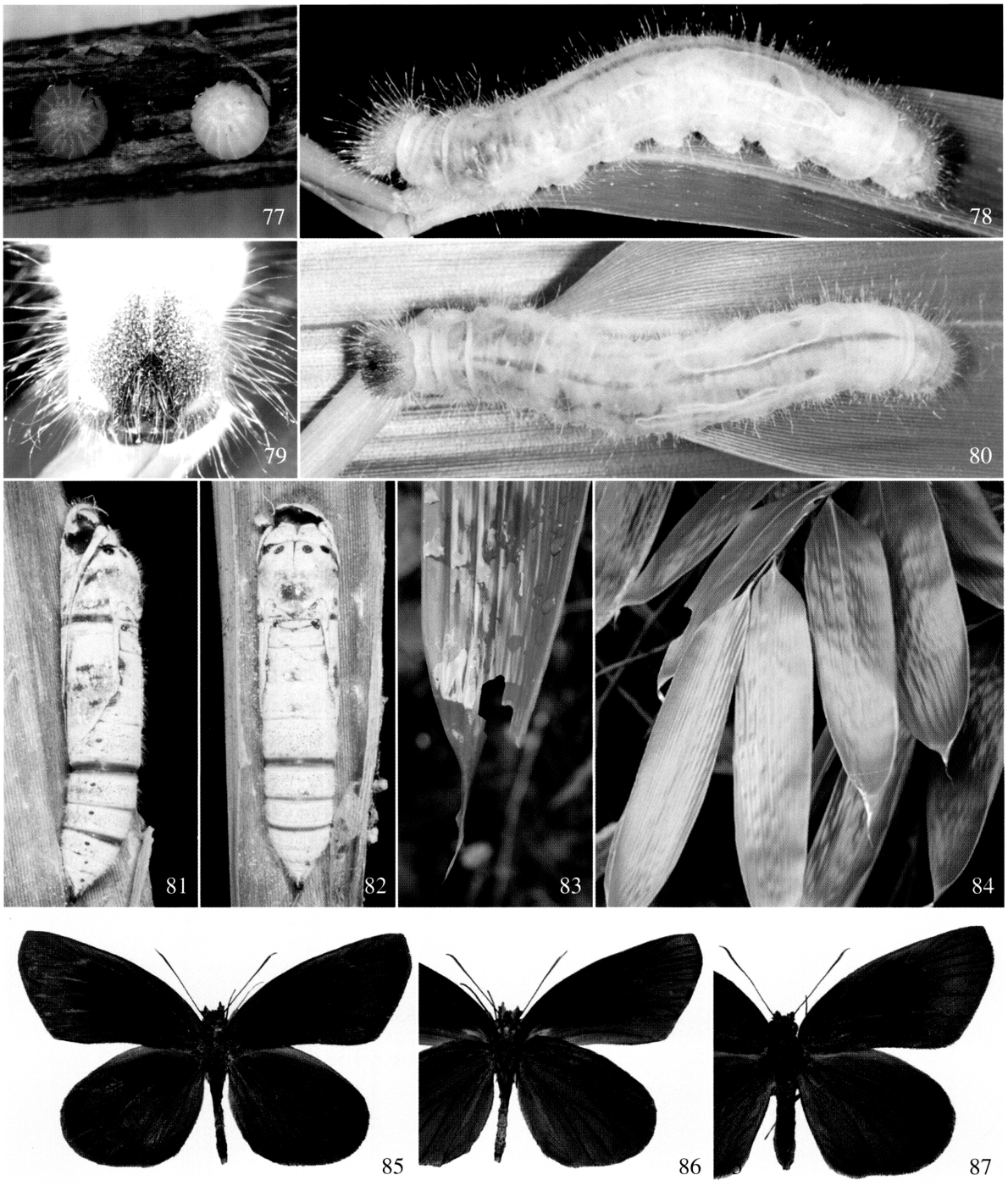

Figs 77–87. *Apostictopterus fuliginosus*.
77: Ovum.78–79: Last instar larva. 80: Last instar larva's head. 81–82: Empty shell of pupa. 83: 2nd instar larva nest. 84: Food plant (Gramineae *Phyllostachys* sp.). 85–86: Male. 87: Female.

(8) *Apostictopterus fuliginosus* (Figs 76–86)

Habitat: Gloomy forest edge on mountain slopes at an altitude of about 800 m.

Larval food plant: *Phyllostachys* sp. / Gramineae

Ovum: The ovum is laid singly on a leaf upper surface of the food plant; It is white in color, turning to brown in a few days.

Larva: The larva has many long hairs on the head and

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body.

Pupa: Pupation occurs in a nest made from two leaves.

Flight: The butterfly is univoltine.

Remarks: This is the first record of the early stages of this species.

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摘　要

広東省南嶺地域における蝶の幼生期の調査(5)（原田基弘・大島良美・吉田良和・王　敏）

我々は2006年の秋から広東省北部に位置する南嶺山地周辺において蝶の幼生期探査のプロジェクトを続けてきた．その成果を順次報告している．

今回の調査報告ではキシタアゲハ，キロンミカドアゲハ，ウラシロタテハ，シロタテハ，ヘレナクロヒカゲ，ドヘルティオオクロボシセセリ，ヴァレンティンオオシロシタセセリ，オオハネマガリセセリについて記述し，生態およびそれらの食樹の写真を示した．

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